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In the Matter of)	
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The 4.9 GHz Band Transfer from)	WT Docket 00-32
Federal Government Use)	
)	

Proxim Corporation hereby submits comments in response to the petition for reconsideration submitted by the National Public Safety Telecommunications Council (“NPSTC”) in the above referenced docket. Proxim is commenting specifically with reference to the statement “the commission must adopt industry standard emission masks from adjacent bands to allow for low cost implementation of equipment in the 4.9 GHz band.”¹ As explained herein, Proxim believes that the FCC’s action to require strong adjacent channel protection for equipment in the 4.9 GHz band was justifiably taken. However, Proxim believes that the FCC should amend its rules to accommodate the desire of the public safety community for the reuse of commercial off-the-shelf (“COTS”) equipment. Since the choice of the emission mask must still be appropriate in the context of a public safety application, we do not agree with NPTSC’s proposal for the

¹ Petition for Reconsideration of the National Public Safety Telecommunications Council, submitted July 30, 2003, ¶3. [Hereinafter “NPTSC Petition”]

general use of the 802.11a/j and DSRC-A masks². However, a mask such as the so-called DSRC-C mask, which is similar to the current 4.9 GHz mask,³ would be appropriate.

The issue of paramount importance in this proceeding has rightly been interference protection to public safety systems. Indeed, were it not for this issue, there would have been little need for this proceeding in the first place. The unlicensed spectrum at 5 GHz could be used to provide broadband applications for public safety users, were it not for the need for those users to be especially confident of the reliability of their communications. The FCC, in recognizing the need for public safety users to have both broadband applications *and* interference protection first allocated the 4.9 GHz band for public safety.⁴ In the Third Report and Order⁵, the FCC crafted rules that would both enable broadband public safety applications, and provide the interference protection these mission critical services require.

Proxim Corporation is one of the leading manufacturers of 802.11-based wireless LAN equipment for large enterprises and vertical markets, including the public safety market. As a manufacturer of 802.11-based equipment, Proxim understands, and shares, the desire of the public safety community to leverage commercial off-the-shelf (COTS) technology to the extent possible. The market for 802.11 equipment is undergoing dramatic growth. The volumes this growth is generating mean that equipment costs have

² NPSTC Petition at ¶16.

³ The current 4.9 GHz mask is detailed in §90.210(l)(1-6) as described in FCC 03-99, “In the Matter of the 4.9 GHz Band Transferred from Federal Government Use, Memorandum Opinion and Order and Third Report and Order”, May 2, 2003.

⁴ Second Report And Order And Further Notice Of Proposed Rule Making, FCC 02-47, February 27, 2002.

⁵ Memorandum Opinion and Order and Third Report and Order, FCC 03-99, May 2, 2003. [Hereinafter “Third Report and Order”]

dropped dramatically, and innovations are occurring at a rapid pace. There is no question that the public safety community should be able to leverage these innovations and economies of scale in their own operations.

On the other hand, public safety services are *not* commercial services, and the set of rules that support commercial services are *not* uniformly transferable to a public safety scenario. The primary area of concern in the public safety environment is that these services are far less tolerant of interference. Indeed, as mentioned above, this susceptibility to interference is what drove the FCC to allocate this spectrum to be specifically for public safety services in the first place.

The sensitivity of public safety operations to interference has been highlighted at the FCC for years. In the 800 MHz band, the mixing of public safety, private wireless, and commercial services, with their different operational characteristics, has resulted in many examples of interference into public safety systems, and has also resulted in many solutions being proposed to address these kinds of problems.⁶ In the 700 MHz band allocation process significant time was devoted to constructing a band plan that would allow public safety operations to share spectrum with commercial services, and a guard

⁶ WT Docket 02-55, “In the Matter of Improving Public Safety Communications in the 800 MHz Band” goes into these issues in great detail, and includes several possible reconfigurations of the 800 MHz band to address the interference issues. The Notice of Proposed Rule Making (FCC 02-81) in this proceeding recounts numerous examples of interference from commercial systems into public safety systems. The proceeding itself is intended to remedy the unacceptable levels of interference that public safety systems in that band receive from commercial systems. A Best Practices Guide (Avoiding Interference Between Public Safety Wireless Communications Systems and Commercial Wireless Communications Systems at 800 MHz – A Best Practices Guide, December, 2000) describes a number of the causes of such interference, including the observation made in the NPRM that “public safety receivers are often not sufficiently selective to reject undesired signals that may be present.” The recognition that receiver quality may be an issue in 800 MHz interference scenarios justifies an attempt to avoid having this become an issue in a newly allocated public safety band.

band mechanism was adopted to limit the interference the public safety services would see from the commercial bands. Key to this guard band solution was the concept of keeping like services together, so that, for example, high power systems with loose adjacent channel requirements would not inhibit the operation of low power public safety devices.⁷

Proxim believes that the FCC, in the Third Report and Order, has struck nearly the right balance between protection and efficient operation of mission critical public safety systems, and the desire to allow those systems to leverage COTS technology. In fact, the FCC needed to make this choice in several places, not only in the area of the emission mask. For example, in the discussion of eligibility, the FCC argued against expanding the eligibility to use the 4.9 GHz spectrum even though an expanded eligibility “may have the benefit of reducing equipment costs or maximizing spectrum usage.” The reason for limiting eligibility was that “such benefits are outweighed by the potential for public safety entities not being able to gain immediate access to or experience interference to their operations in the band.”⁸ This exact logic explains the decision to require a tighter spectral mask in the 4.9 GHz band than is used in the commercial 5 GHz bands. While a looser mask might reduce costs, it would also result in increased interference and susceptibility to interference, and in this context, the cost outweighs the benefit.

⁷ See, for example, the Second Report and Order in Docket WT 99-168, Service Rules for the 746-764 and 776-794 MHz Bands, March 9, 2000. In this Order the FCC created a guard band of spectrum between the public safety operations and the commercial operations in the 700 MHz spectrum. “To minimize the potential for harmful interference to public safety operations in the immediately adjacent 700 MHz spectrum” the FCC required “entities operating in the Guard Bands to comply with specified ‘out-of-band emission’ criteria, and with prescribed frequency coordination procedures.” The precedent, therefore, for restrictive measures to protect public safety operations is well established.

⁸ Third Report and Order at ¶ 20.

The requirement for a spectral mask tighter than that used for 802.11 equipment will not remove the economy of scale benefits that the public safety users will be able to realize. First, we believe that with the choice of an appropriate industry-standard mask, such as the DSRC-C mask, it will be economically feasible to use COTS chipsets designed for 802.11 applications and still meet the requirements of the mask. In addition, other than the specific radio portion of the solution, other elements of the radio chipset will be completely reusable, including the 802.11 MAC protocols, security enhancements such as 802.1X, the use of RADIUS servers, and other enhancements that manufacturers have developed to work with 802.11-based products. As a benefit, a narrower mask than used for 802.11 commercial products will allow public safety users to limit their susceptibility to interference, and also to make better use of the allocated spectrum by simultaneously using a greater number of channels in the same geographic area.

The NPSTC petition for reconsideration itself acknowledges that, in some cases, a tighter emission mask may be required. NPSTC writes

“In areas where the need for tighter emission masks are necessary, or for band-edge equipment where limiting interference to adjacent services is important, the option to apply the DSRC-b/c/d masks should be available to Regional Planning Committees, or to the Commission, for interference protection.”⁹

Such a statement shows why the FCC’s inclination to impose a tighter mask in all areas is justified. If different regions were to have different required masks, two clear problems would arise.

⁹ NPSTC Petition for Reconsideration at ¶16.

1. When one public safety entity came to the aid of another, possibly one that is very geographically distant, interference problems would arise when equipment and systems designed for certain adjacent channel characteristics would now be in the presence of equipment with different characteristics. A worse scenario would be one in which the masks were so different that changes in the modulation were required. In that scenario, the devices might actually be non-interoperable.
2. Inefficiencies would be introduced into the process, and economies of scale would be reduced. Emission masks are regulated through the FCC's equipment authorization program, which is applied nationwide prior to the product being placed on the market. Proxim believes it is impractical and inefficient for manufacturers, the Commission, or public safety users to administer a geographic-based emission mask requirement with any confidence. In addition, such a requirement could actually reduce nationwide economies of scale for public safety users, with products requiring a certain mask for operation in one area, and products requiring another mask for operation somewhere else.

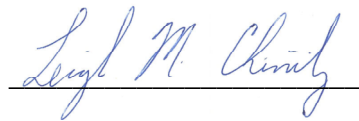
For these reasons, the most appropriate solution is for the FCC to require conformance to an emission mask that will work in all cases, but which still allows the reuse of the vast majority of the 802.11-based development that has taken, and is taking, place in the commercial sector.

Proxim understands that NPSTC has been working closely with manufacturers of wireless equipment and suppliers to the public safety market to come to a common understanding of the equipment needs for this new allocation. We encourage all parties to continue that dialog. Proxim looks forward to supplying the public safety community with equipment that meets their needs, and we encourage all parties to make sure that the rules that are created satisfy those needs, and do not threaten the ability of these agencies to guard the safety of the public.

As a manufacturer of unlicensed wireless equipment, Proxim is very excited about the opportunity to provide equipment to the public safety market. We also believe that the

right direction for this market is the reuse, whenever possible, of the massive developments in the commercial space. However, as experts in RF technology, we understand that a single set of rules cannot be appropriate for all users. Therefore, we believe that the FCC's inclination to require a tight emission mask, as described in the Third Report and Order of this proceeding, is appropriate. However, we believe that a compromise between the FCC's mask and the public safety community's desire for reuse of COTS equipment can be reached by resorting to an industry-standard emission mask that provides the adjacent channel performance this new band requires. The DSRC-C mask provides an industry-standard mask that balances these requirements.

Respectfully Submitted

A handwritten signature in blue ink, reading "Leigh M. Chinitz", is positioned above a horizontal line.

Leigh Chinitz
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